

REMARKS

Claims 1-3 and 5-21 are all the claims pending in the application. Claims 6-21 are withdrawn from consideration as being drawn to nonelected claims.

Claims 1 and 2 are amended to each incorporate the subject matter of Claim 4, and Claim 4 is cancelled. No new matter is added. Entry of the Amendment is hereby requested.

Election/Restriction

Applicants appreciate that the Examiner has acknowledged the election with traverse of Invention I, Claims 1-6, on the grounds that Applicants reserve the right to rejoin process claims provided that rejoined claims contain all of the limitations of the allowed article claim.

Claim Rejections – 35 U.S.C. § 102/103

Claims 1-3, 5, and 6 are rejected under 35 U.S.C. 102(b) as allegedly being clearly anticipated by Hitachi JP-08-036744. The Examiner cites to Hitachi's Claim 1.

Claim 4 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Hitachi.

The Examiner states that Hitachi discloses a protective film comprised of carbon, hydrogen, nitrogen and argon. Hitachi is further relied upon to assertedly disclose a specific embodiment in which the hydrogen content is in a range of 5-10%. However, the Examiner asserts that since hydrogen is a well known results effective variable effecting the sp³/sp² ratio in a carbon film which in turn determines the hardness and the media properties such as CSS and durability, it would have been obvious to one of ordinary skill in the art to vary the proportion of hydrogen to get maximum performance with a given specific perfluoropolyether lubricant and a given magnetic head slider composition and structure.

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Claims 1-3, 5, and 6 are rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Chen (US 6,136,421). The Examiner cites to Chen, Col. 3 lines 7-11.

In order to advance prosecution, Applicants have amended independent Claims 1 and 2 to each incorporate the subject matter of Claim 4. Claims 1 and 2 now read as follows:

1. (Amended) A magnetic disk, comprising a magnetic layer, a protective layer, and a lubricating layer coated at least on one surface of a flexible support member, wherein the protective layer contains at least carbon, hydrogen and nitrogen and wherein hydrogen content of the protective layer is 25 - 35 atom %.

2. (Amended) A magnetic disk comprising a magnetic layer, a protective layer, and a lubricating layer coated at least on one surface of a flexible support member or a rigid support member, wherein the protective layer contains at least carbon, hydrogen, nitrogen and rare gas elements and wherein hydrogen content of the protective layer is 25 - 35 atom %.

Applicants further respond as follows.

According to the invention of the present application, a magnetic recording medium is provided, which is obtained by preparing a protective film having high hardness and a low friction coefficient and which is not limited to a medium having a rigid support member such as a hard disk but has a flexible disk exhibiting sufficient running durability even when it is used under severe sliding conditions.

The above object of the present invention is attained by a magnetic disk, which comprises a magnetic film, a protective film, and a lubricating film laminated one upon another and formed at least on one of the surfaces of a flexible support member, the protective layer containing at

least carbon, hydrogen, and nitrogen, and wherein the hydrogen content of the protective film is in the range of 25-35 atom %.

Also, the present invention provides for a magnetic disk, which comprises a magnetic film, a protective film, and a lubricating film laminated and formed at least on one of the surfaces of a flexible support member or a rigid support member, the protective layer containing at least carbon, hydrogen, nitrogen, and rare gas elements, and wherein the hydrogen content of the protective film is in the range of 25-35 atom %.

In contrast, Hitachi (JP-08-036744) describes a magnetic recording medium of high recording density with good reliability and having properties such as CSS and not very likely to cause head adsorption even under high temperature and high humidity conditions. However, Hitachi does not describe a flexible disk type magnetic recording medium with high running durability and good reliability for practical use, as proposed by the present invention.

Although Hitachi describes a protective film formed on a magnetic layer, it does not disclose, suggest or make obvious the use of a protective film with hydrogen content in the range of 25-35 atom %, as in the present claimed invention.

The hydrogen content range of the protective layer in Applicants' claims is not disclosed or taught by the cited prior art.

Therefore, Applicants traverse the Examiner's position on the basis that Hitachi does not disclose, suggest or make obvious the present claimed invention.

In regards to Chen et al., Applicants respond as follows.

Chen et al. (US 6,136,421) relates to a magnetic recording medium, which has good durability and has superb friction property even when the head-floating height is low. Chen gives no description on the use of a flexible disk having high running durability and good reliability in practical application.

Chen describes a magnetic recording medium, which comprises a protective film containing Si, N and O and in which a layer of hydrogenated carbon, nitrogenated carbon, or hydrogen-nitrogenated carbon is formed on the protective film, whereby the content of the hydrogenated carbon is in the range of 5-20 %, and the content of nitrogenated carbon is in the range of 0.03 - 0.3 %. Chen is silent with respect to a flexible disk where a protective film with a hydrogen content of 25 - 35 atom % is formed as described in the present invention.

Therefore, the magnetic recording medium of the present invention has a structure different from that of the magnetic recording medium described in the cited references. The present invention is neither identical with any of the cited references nor is it obvious from any of the references.

In view of the above, the rejections are believed to be overcome, and Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102 and § 103.

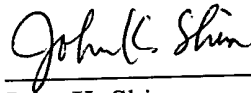
Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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PATENT TRADEMARK OFFICE

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 4 is canceled.

The claims are amended as follows:

1. (Amended) A magnetic disk[,] comprising a magnetic layer, a protective layer, and a lubricating layer [coatd] coated at least on one surface of a flexible support member, wherein the protective layer contains at least carbon, hydrogen and nitrogen and wherein the hydrogen content of the protective layer is 25 - 35 atom %.

2. (Amended) A magnetic disk comprising a magnetic layer, a protective layer, and a lubricating layer [coatd] coated at least on one surface of a flexible support member or a rigid support member, wherein the protective layer contains at least carbon, hydrogen, nitrogen and rare gas elements and wherein the hydrogen content of the protective layer is 25 - 35 atom %.